The extent to which the dimensions of thinking in chemistry units are included in the books of “Science and Life” for the upper basic stage

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Abstract

This study aimed to identify the dimensions of thinking included in the units of chemistry in "science and life" books for Basic Education High Level. The descriptive approach was used (content analysis), and the study population consisted of the contents of all chemistry units in science and life books for grades (fifth - ninth). To achieve the goals of the study, the researcher prepared valid and reliable content analysis tool that includes (6) dimensions of thinking, which are: meta-cognitive, critical thinking, innovative thinking, scientific thinking, systemic thinking, and visual thinking, covered(30) sub-skills related to them, and (103) indicators for these skills.

The study found that the main skills of the dimensions of thinking included in the chemistry units of "science and life" books for grades (fifth - ninth) have come respectively: the highest percentages appeared in the seventh grade / first semester with a percentageof (23.4%) in the meta-cognitive dimension, The fifth grade / first semester comes for the dimension of meta-cognitive with a percentage of (22.6%), and then the sixth grade / first semester comes for two dimensions (meta-cognitive, scientific thinking) with a percentage of (22.4%). As for the ninth grade / second semester for the dimension of scientific thinking, the percentage is (22.2%), while the percentage of the eighth grade / first semester for the dimension of scientific thinking is (21.8%).Finally, the seventh grade / The second semester has two dimensions (meta cognitive, and critical thinking) with a percentage of (21.7%), and the eighth grade / second semester for the meta-cognitive dimension appears with a percentage of (21.4%).

As for the sub-skills of the dimensions of thinking included in the units of chemistry in the books of science and life for grades (Fifth-Ninth), they came, respectively, as the following: The highest proportions appeared in the eighth grade / first semester in the skill of building the systemic form with a percentage of (60%) for the dimension of systemic thinking. The sixth grade / first semester in the skill of building the systemic form appears with a percentage of (50%) for the dimension of systemic thinking. As for the seventh grade, the percentage is (50%) for the two semesters (the first and the second semesters) in the skill of building the systemic form, and then the ninth grade comes with a percentage of (50%) in the skill of building the systemic form for the dimension of systemic thinking. while the eighth has a percentage of (41.3%) in the skill of fluency for the dimension of the innovative thinking. Finally, the fifth grade has a percentage of (41.1%) in the planning skill for the dimension of the cognitive dimension.

Based upon the results of the study, the researcher recommends that the attention must be considered in order to study the science curricula for the basic education high level, include the dimensions of thinking in the content of science books for grades (Fifth-Ninth), and incorporate strategies for teaching curricula and take into consideration all aspects of the educational process in order to take into account individual differences between Students.Besides, the researcher recommends to set goals in the curricula in ways that suit

the content, activities and evaluation, conduct courses for teachers to introduce them to the dimensions of thinking and how to integrate them with the curricula during the teaching process, encourage teachers to diversify methods of teaching and the use of modern ones in teaching dimensions of thinking, and conduct studies to compare old curricula with Modern ones in terms of the extent to which they contain the dimensions of thinking, and the process of the including the dimensions of thinking between classes in a manner that takes into account the capabilities of students and the individual differences between them.

The researcher also suggests to work on forming a specialized scientific committee to study the dimensions of thinking to achieve the utmost benefit from them, and include them in the scientific curricula at schools. She also ensures the importance of adding modern scientific dimensions that have proven the progress of societies and their development, and enhance the technological aspect in each dimension, which in turn will facilitate the process of education.